MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/2016

BEV3024 – ENVIRONMENTAL ECONOMICS

(All Section/Group)

29 February 2016
9.00am – 11.00am
(2 Hours)

INSTRUCTION TO STUDENT

1. This question paper consists of **THREE (3)** pages excluding cover page with Section A and B.
2. Section A consists of **One (1)** Case Study. Section B consists of **Three (3)** Structured Questions.
3. Attempt **ALL** questions.
4. Please write all the answers in the answer booklet provided.
5. The marks distribution for each question is given. Total marks 100.

SECTION A: CASE STUDY (40%)

Effect of Climate Change and Global Warming is Real, Cannot be Viewed Lightly

BERNAMA, Wednesday, 02 December 2015 21:32

KUALA LUMPUR: Prime Minister Datuk Seri Najib Tun Razak said the effect of climate change and global warming is real, and cannot be viewed lightly.

"Its effects are real and Malaysians are not spared from feeling the effects of it. Our drought seasons are prolonged, as our rainy seasons too. We suffer from water supply crises in some states as well as one of the worst floods the country has seen in decades," he said in his latest posting in his blog www.najibrazak.com.

Najib said fighting climate change is an on-going effort that must be led by the Government, and undertaken and supported by everyone in the country.

"The government is ready to address this issue head on - Malaysia intends to reduce reduce its greenhouse gas (GHG) emissions intensity of Gross Domestic Product (GDP) by 45 percent by 2030 relative to the emissions intensity of GDP in 2005.

"This consists of 35 per cent on an unconditional basis and a further 10 per cent is condition upon receipt of climate finance, technology transfer and capacity building from developed countries," he said.

Najib said Malaysia together with 181 countries have submitted the Intended Nationally Determined Contribution (INDC) for the United Nations (UN) Climate Change Conference, currently ongoing in Paris, reaffirming its stand and commitment in fighting climate change.

He said despite the government launching several initiatives since 9th Malaysia Plan (2006-2010) which includes the National Biofuel Policy (2006), Renewable Energy Policy and Action Plan (2010), "we have not done enough."

"The United Nations data showed that Malaysia ranked 26th worldwide in 2012 when it came to carbon dioxide (CO2) emissions from fuel combustion," he said.

Najib said Malaysia remained steadfast and committed in its mission to reduce Malaysia's carbon footprint and under the 11th Malaysia Plan (2016-2020), policies that will further focus on pursuing green growth for sustainability and resilience will be carried out.

"The measures will include strengthening the enabling environment for green growth, adoption of sustainable consumption and production, conserving natural resources and strengthening resilience against climate change and natural disasters," he said.

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"This new target shall not and should not be seen as an impediment to our economic development. Indeed, I believe, our green policies and initiatives will also bring many opportunities - catalysing new industries and ancillary businesses that will bring new employment opportunities," he said.

Najib said Malaysians need to play their part in fighting climate change and help prevent average global temperatures from rising above two degrees Celsius.

"It is our social and moral obligation to ensure that our sons and daughters will be able to enjoy the world as we see it today. Malaysia must play its responsible role in the necessary global transformation for a more sustainable world," he said.

Based on the above article, answer the following questions:

a) What do you understand about climate change? How does climate change affect Malaysians? (10 marks)

b) As an environmental economist, suggest any **TWO (2)** of the market-based instruments for Mr Najib Razak to cuts Malaysia's carbon dioxide emissions. Discuss with suitable modeling. (16 marks)

c) *"In Malaysia, 94.5 per cent of electricity is generated by using fossil fuel such as natural gas, coal, diesel oil and fuel oil (highly polluted source)."*
(Source: S.M. Shafie et. al, 2011, Renewable and Sustainable Energy Reviews)

Suggest any **TWO (2)** actions that need to be strictly implemented by the government to support the use of renewable energy. Discuss. (14 marks)

SECTION B: STRUCTURED QUESTIONS (60%)

QUESTION 1 (20 marks)

a) Discuss any **TWO (2)** major obstacles in estimating the benefits of water pollution abatement. (10 marks)

b) Describe Industrial Ecology. Explain the **TWO (2)** main objectives of Industrial Ecology. (10 marks)

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QUESTION 2 (20 marks)

a) In order to achieve its commitments under the Montreal Protocol, Country X implemented an excise tax on Chlorofluorocarbons (CFCs) usage. Consider the following market for CFCs before the excise tax is imposed, where P is price per unit.

Demand: Q = 16.00 – 0.5P Supply: Q = 12.00 + 3.5P

Now assume that a 70 cent excise tax is used, which shifts the supply curve to Q' = 10.00 + 3.5P.

i) Calculate the equilibrium price before and after the tax is implemented. (4 marks)
ii) Refer to the answer in (i). Who will bear the primary burden of the tax—buyers or sellers? Discuss. (6 marks)

b) Assume that the Marginal Social Benefit (MSB) and Marginal Social Cost (MSC) of abating Carbon Dioxide (CO_2) emission are as follows for Country Y.

MSB = 32 – 0.2A **MSC = 16 + 0.2A**

i) A National Carbon Dioxide Emission Standards (NCDES) was set based on a benefit-based decision rule. Determine the abatement level of carbon dioxide that would adhere to this rule. (5 marks)

ii) If the NCDES was legislated to achieve efficiency, determine the efficient abatement level (A_E) for carbon dioxide. (5 marks)

QUESTION 3 (20 marks)

a) Tom is a city planner, who is working in a new industrial park and contemplating the use of an industrial ecosystem. Explain any **TWO (2)** advantages and **TWO (2)** disadvantages of an industrial ecosystem for Tom would consider in his decision making. (10 marks)

b) Two plastic manufacturing factories, Factory G and Factory H were faced with the following Marginal Abatement Costs (MAC) for Benzene.

$MAC_G = 1.2A_G$ **$MAC_H = 1.8A_H$**

A_G represents the quantity of abatement for Firm G and A_H represents the quantity of abatement for Firm H. In the aggregate, the two firms do not hold enough Benzene allowances to cover their production activity and must abate a combined level of 20 units. Should each firm abate 10 units each? Economically explain your answer with MAC justification. Show all your working to support your answer. (10 marks)

End of Paper